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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/614,864

07/09/2003

Yasuo Inoue

29284/593

8161

7590

07/11/2006

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EXAMINER

CHEN, ALAN S

ART UNIT

PAPER NUMBER

2182

DATE MAILED: 07/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/614,864	<b>Applicant(s)</b> INOUE, YASUO	
	<b>Examiner</b> Alan S. Chen	<b>Art Unit</b> 2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2006.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED FINAL ACTION**

### ***Response to Arguments***

1. Applicant's arguments, filed 04/26/2006, with respect to the rejection(s) of claim(s) 15 under 35 U.S.C. §102 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of previously applied prior art to Carteau et al. (Carteau).
2. Examiner and Applicant's representatives discussed the reference to Carteau in an interview on 04/21/2006 (see Interview Summary entered 04/21/2006). Applicant's representative emphasized that the channel units (HA<sub>1</sub> and HA<sub>2</sub>) are only connected to one bus. Examiner agreed with this. However, the Applicant's representative construed this to mean Carteau only had one path to connect the multiple cache units (CA<sub>1</sub> and CA<sub>2</sub>) to the channel unit. Examiner does not agree with this. Fig. 1 of Carteau clearly shows two distinct paths, one path going from the channel unit (HA<sub>1</sub>) to a first cache unit (CA<sub>1</sub>) and another separate path going from the channel unit (HA<sub>1</sub>) to the cache unit (CA<sub>2</sub>). Column 16, lines 60-65 of Carteau discloses support for the channel unit to communicate with the two cache units. The Examiner does not equate one bus to mean one path. Furthermore, the scope of the claims do not require one bus to mean one path.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by  
Carteau.

5. Per Claim 1, Carteau discloses a storage system (*Fig. 1*) comprising a channel unit (*Fig. 1, element HA1 or HA2 is the host adapter which is directly linked with the link channel, CE, hence, being the channel unit; Fig. 1 and Column 4, lines 25-35 disclose the Host, e.g., the upper level system, communicating with the storage system via the host adapter which controls/interfaces the link channel, CE*) that transfers data sent from an upper-level system (*Fig. 1, host are shown as H1, H2, etc*) and transfers data to said upper-level system (*Fig. 1, channels CE clearly shown as bidirectional*), a plurality of cache units (*Fig. 1, CA1 and CA2 are cache units*) coupled to said channel unit (*buses B1 couples the host adapter/channel unit HA1 to cache units CA1 and CA2; similarly B2 couples the host adapter/channel unit HA2 to cache units CA1 and CA2*) and in which data sent from said channel unit is stored (*Fig. 8A shows HA1 writing a block to a cache CA1-CA2*), a control unit (*Fig. 1, DA1 and DA2 are disk adaptors that control access to disk array BMD1*) that is coupled to said cache units (*DA1 is coupled to caches, CA1 and CA2, via buses B1*) and transfers or receives data to or from said cache units (*Column 16, lines 60-65 disclose the ability for the units shown in Fig. 1 to assume the responsibility of the corresponding symmetric counterpart unit, e.g., DA1 for*

*DA2 or HA1 for HA2, when it is unavailable); at least one first processor controlling transfer of data between said channel unit and said plurality of cache units (PR1, Column 10, lines 65-Column 11, lines 5, processor enables HA1 to communicate with CA1/CA2 by loading implementation programs for the units), one second processor (Fig. 1, PR2) controlling transfer of data between said control unit and said plurality of cache units (Column 10, lines 65-Column 11, line 5, processors control the operations of the control unit, e.g., transfers of data to cache units), a disk device in which data sent from said control unit is stored (Fig. 1, elements D1-D6), and a plurality of paths connecting said channel unit to said plurality of cache units (B1 has a path from HA1 to CA1 and a distinctly different path from HA1 to CA2).*

6. Per Claim 16, Carteau discloses the first six limitations of claim 1. Carteau further discloses the storage system having a first path coupling said channel unit to one of said plurality of cache units (*Fig. 1, path from HA1 to CA1*), and a second path coupling said one of said plurality of cache units to said control unit (*Fig. 1, path from CA1 to DA1*) wherein said first path is different from said second path (*both paths in Fig. 1 are distinct*).

7. Per Claims 2-10 and 14, Carteau discloses claim 1, further disclosing two distinct paths on bus B1, one going from HA1 to CA1 and another going from HA1 to CA2 (*Fig. 1*) that do not completely overlap each other. The claims do not preclude a shared bus, as long as two different paths exist on the bus, which is indeed the case in Fig. 1, where two paths are necessary for HA1 to communicate with two separate cache units.

8. Per claim 11, Carteau discloses claim 1, further disclosing said disk device includes a plurality of disk drives (*Fig. 1, elements D1-D6*), and said control unit is connected to said plurality of disk drives (*Fig. 1, DA1 is connected to disk drives through CS1*).
9. Per claims 12, 13, 15 and 20, Carteau discloses claims 1 and 16, further discloses the said plurality of paths are signal lines (*buses/channels Bx, CEx are all by definition signal lines*) linking said cache unit and said channel units that enable the upper-level system to communicate with the disk device which entails reading and writing data using commands, to and from storage (*Fig. 7 shows read commands from cache units and channel unit, Fig. 8 shows write commands from cache units and channel unit*).
10. Per claims 17-19, Carteau discloses claim 16, wherein said first and second paths are independent of each other, directly linking two units point-to-point.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Patents and patent related publications are cited in the Notice of References Cited (Form PTO-892) attached to this action to further show the state of the art with respect to multiple cache units in communication between a channel unit and a control unit.
12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

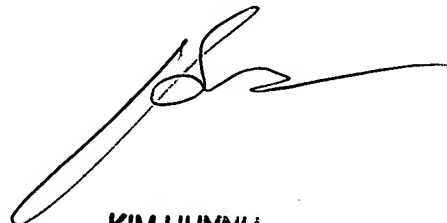
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan S. Chen whose telephone number is 571-272-4143. The examiner can normally be reached on M-F 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim N. Huynh can be reached on 571-272-4147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ASC  
07/05/2006



**KIM HUYNH**  
**SUPERVISORY PATENT EXAMINER**  
7/7/06